(No Model.)

W. D. HARPER.

SULKY.

No. 456,565. Patented July 28, 1891.

Fig. 1.

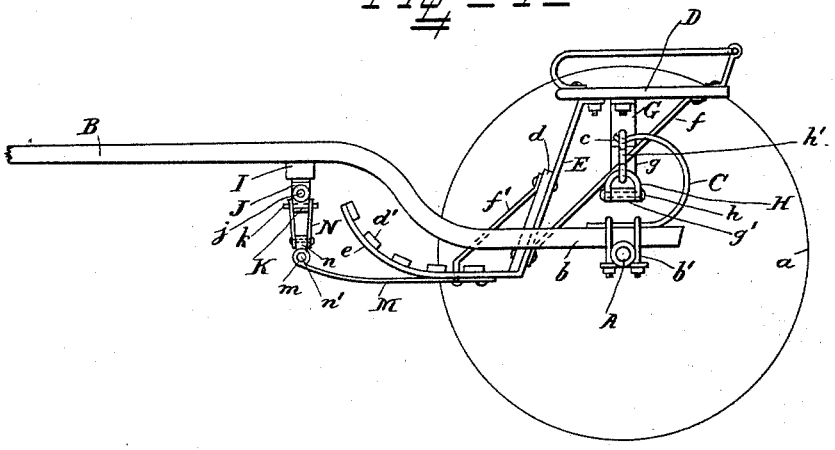


Fig. 2.

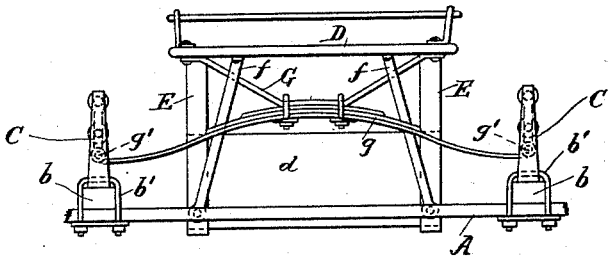
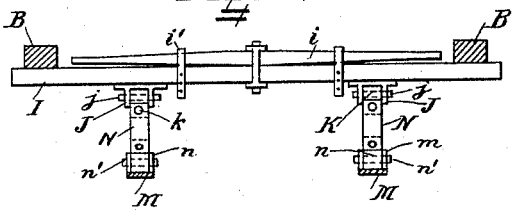


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM D. HARPER, OF QUANAH, TEXAS.

SULKY.

SPECIFICATION forming part of Letters Patent No. 456,565, dated July 28, 1891.

Application filed January 7, 1891. Serial No. 377,013. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM D. HARPER, a citizen of the United States, residing at Quanah, in the county of Hardeman and State of Texas, have invented certain new and useful Improvements in Sulkies; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to two-wheeled vehicles; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed, whereby the body of the vehicle is supported so as to vibrate freely in every direction.

In the drawings, Figure 1 is a side view of the sulky with one of the wheels removed. Fig. 2 is a rear view of the devices for supporting the rear end of the body. Fig. 3 is a similar view of the devices for supporting the front end of the body.

A is the axle, provided with road-wheels *a* of approved construction.

B are the shafts, having downwardly-cranked rear ends *b*, which are secured to the axle by the clips *b'*.

C are curved springs, also secured to the ends *b* by the said clips *b'* and provided with the hooked upper ends *c*.

The body of the vehicle consists of the seat D for the driver, the guard-board *d*, the foot-boards *d'*, and two bent supporting-bars E, secured to the seat and guard-board, and provided with curved front ends *e*, secured to the foot-boards. Braces *f* and *f''* are also secured to the seat and guard-board at the rear and to the guard and foot boards in front, respectively, so that the body of the vehicle may be both light and rigid.

G is a vertical bracket secured to the under side of the seat, and *g* is a spring having its middle portion secured to the lower part of the said bracket and provided with the eyes *g'* at each end.

H are shackles pivoted to the eyes *g'* by the pins *h*, and *h'* are links having eyes at each end. The shackles H are suspended from the ends *c* of the springs C by the links *h'*, so that the rear end of the vehicle-body is free to vibrate in every direction.

I is a cross-bar secured to the shafts, and *i* is a whiffletree pivoted to the said cross-bar and provided with the check-straps *i'* in the usual manner.

J are double eyes secured to the under side of the cross-bar I and provided with the pins *j* in line with the cross-bar.

K are knuckles pivoted on the pins *j* and provided with the pins *k* below the said pins *j* and at right angles to them.

M are springs secured at one end to the under side of the bars E and provided with the double eyes *m* at their front ends.

N are links, having their upper ends pivoted on the said pins *k* and having their lower ends bolted to the single eyes *n*, which are pivoted on the pins *n'*, which pass through the double eyes *m*. It will be seen that the front end of the body is free to vibrate both laterally and longitudinally, and that the springs absorb all the vertical or jolting motion due to the roughness of the road, as well as the pitching motion due to the movements of the animal.

The body of the vehicle is supported at three points, and the vehicle is specially designed to combine lightness with great strength and elasticity.

What I claim is—

1. The combination, with the shafts having cranked rear ends, of the curved springs secured to the said ends, the vehicle-body, the spring secured centrally to the vehicle-body and having its ends suspended from the said curved springs, so that the body may vibrate in every direction, a cross-bar secured to the shafts, the springs secured to the body at one end, and links pivotally suspending the free ends of the last said springs from the said cross-bar, substantially as set forth.

2. The combination, with the shafts having cranked rear ends, of the curved springs provided with hooked upper ends, the vehicle-body, the shackles pivoted to the ends of the said spring, the links pivoted to the shackles and to the said hooked upper ends, the springs secured to the body at one end, a cross-bar secured to the shafts, the double eyes secured to the cross-bar, the knuckles pivoted to the said double eyes, and the links pivoted to the said knuckles and to the free ends of the

last said springs, substantially as and for the purpose set forth.

3. The combination, with the vehicle-body consisting of the bent bars E, the seat, the guard-board and the foot-boards secured to the said bars, and the braces f and f', of the bracket secured under the seat, the spring secured centrally to the said bracket, the springs secured at one end to the vehicle-body, the shafts having cranked rear ends, the cross-bar secured to the shafts, the curved springs secured to the said rear ends, and the links N and h', pivotally supporting the body and permitting it to vibrate in every direction, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM D. HARPER.

Witnesses:
W. E. JOHNSON,
W. E. SMITH.